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OUTLOOK

A WEEKLY NEWSPAPER FOR FACULTY AND STAFF AT THE UNIVERSITY OF MARYLAND AT COLLEGE PARK

FEBRUARY 4, 1991
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The Silverman Compound: Turning Ordinary Rubber Into Super Rubber

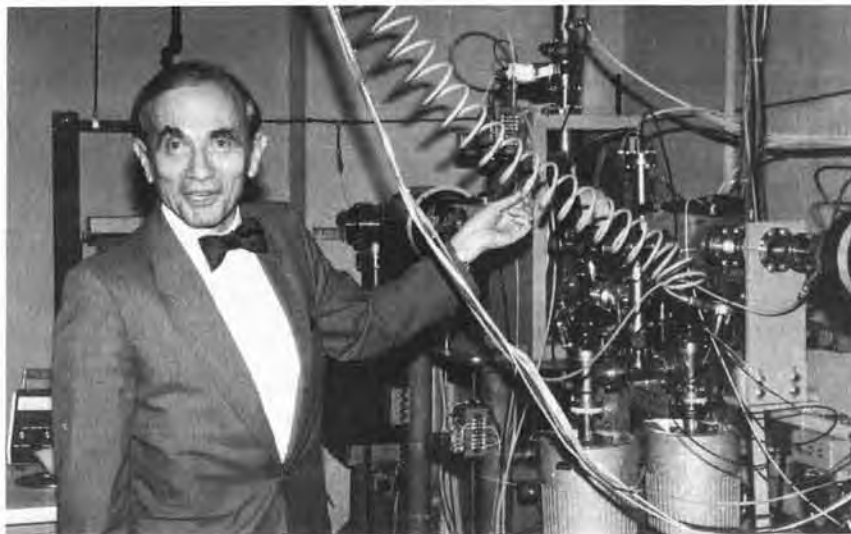
A University of Maryland at College Park researcher has invented a new technique that turns ordinary rubber into super rubber.

The new rubber, created by Joseph Silverman, professor of Material and Nuclear Engineering, lasts up to three times longer than conventional synthetic rubber, is practically invulnerable to environmental damage, and can be produced at a cost only slightly higher than that needed to produce styrene-butadiene rubber, the most common type of synthetic rubber used in military and consumer products.

While its most immediate application appears to be as a replacement for the rubber now used in military tank tread pads, the new compound could prove useful in a whole range of other products.

Creation of the new compound was nine parts science and one part luck. In searching for a longer-lasting rubber compound, Silverman and his associates mixed certain additives to conventional rubber, partially cured the mixture with heat and pressure, and then bombarded the compound with millions of volts of electron energy from an electron accelerator.

The results surprised even Silverman. "Our approach is in a sense really a minor modification of conventional rubber curing techniques," Silverman notes, "but what



Joseph Silverman finds his lab a crowded place, but equipment such as this accelerator is vital to his diverse research projects.

we ended up with is a new compound that has proved significantly superior to conventional rubber in every test tried."

Development of the new rubber was funded by the U.S. Army. The army wanted a replacement for the rubber used in pads attached to tank treads which wear out quickly under the weight of the 70-ton machines. Pads help stabilize tanks

and also prevent road damage from the massive vehicles.

Cost was another motivation in the army's search for an alternative pad. Individually, such pads are relatively inexpensive. But collectively, replacing tank pads for all the army's tanks costs taxpayers a hefty \$100 million a year.

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The Strategic Planning Process: A Talk with the Provost

President Kirwan has appointed a Strategic Planning Committee to develop a plan for the university. Vice President for Academic Affairs and Provost Bob Dorfman chairs the group. *Outlook* editor Roz Hiebert talked with the provost recently about the committee's work.

Q: Was the committee created because of the current budget situation?

A: It certainly was stimulated by the budget situation. But it really should be seen as a further elaboration of the ideas that underlie APAC (Academic Planning Advisory Committee), namely a long-range planning activity but one that will involve the whole campus. The planning that we do must examine the whole spectrum of campus activities and ask which are essential or basic to the university and how can we improve their quality. These questions should always be asked, but it's clear that in the next few years they will be especially critical for the university.

Q: Who will be on the committee?

A: The four vice presidents plus

several others chosen by the president and the Campus Senate Executive Committee.

Q: When will you begin meeting?

A: Immediately. We don't have a lot of room to delay. Several activities are taking place already.

Q: Such as?

A: The deans, after consulting with their faculty, have presented a three-year cost-containment reallocation plan to APAC. APAC is reviewing the plan and meeting with the deans in order to make its recommendations. The Finance Committee, chaired by Dr. Sturtz, is managing the Fiscal Year 1991 budget situation. The Finance Committee is working diligently on managing the campus budget. During the next several months, we have to make some critical decisions about how we are going to maintain the momentum of the campus and deal with the Enhancement Plan at the same time that our resources are shrinking. We can't do everything that we envisioned in the plan because it assumed a certain

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Civil War Historian Barbara Fields to Speak Feb. 7

Barbara Fields, one of the historians featured on the highly acclaimed public television series, "The Civil War," will present a lecture, "Who Freed the Slaves?" on Thursday, Feb. 7 at 7:30 p.m. in Room 2203 of the Art/Sociology Building. Fields, a professor of history at Columbia University, is also an associate editor of the Freedmen and Southern Society Project and worked at College Park in 1981-82. The lecture is scheduled in honor of Black History Month and jointly sponsored by Arts and Humanities and Academic Affairs. A reception will follow the talk. Call 405-2097 for information.

College Park "In the News"



The work of College Park faculty and academic programs at the university frequently receive attention in the news media.

College Park-related stories appear regularly in both the regional and national media and our faculty members often are quoted as experts in breaking news situations. Here are some recent highlights in news coverage of College Park.

• College Park experts in public affairs and the sciences have been consulted on a variety of issues relating to the war in the Persian Gulf. **Michael Nacht** (Public Affairs), **Steve Fetter** (Public Affairs), **William Galston** (Public Affairs), **Catherine Kelleher** (Public Affairs), **Alan Robock** (Meteorology) and **Bruce Jarvis** (Chemistry) were all quoted in war-related stories by such news organizations as Cable News Network, *The Baltimore Sun*, *The Los Angeles Times*, *The Miami Herald*, and WTOP Radio.

• **Eugenie Clark** (Zoology) made two recent appearances in the national media. NBC's Today Show did a lengthy feature story on Clark and her work on sharks. *The New York Times* quoted Clark as an expert in a story on the hunting of sharks.

• Another zoologist, **Sue Carter**, was featured in the Jan. 22 *New York Times*. Carter was quoted extensively in the paper's lead science story on oxytocin.

• **Roald Sagdeev**, College Park's Distinguished Professor of Physics and former science advisor to Soviet President Gorbachev, has been the subject of extensive media attention since becoming a permanent faculty member this fall. His convocation speech was covered by the *Baltimore Sun* and *Los Angeles Times*. The Voice of America broadcast an interview with Sagdeev in late December to a potential audience of 18 million people world-wide.

• Another Soviet scholar at College Park, mathematician **Michael Brin**, was featured in a December ABC Nightly News report about the brain drain of Soviet scientists to the United States.

• AIDS Awareness Week at College Park in late November received positive coverage locally on four television news programs and two radio news programs and national attention in *The Chronicle of Higher Education*.

• *The Chronicle of Higher Education* also quoted and pictured **Kathryn Mohrman** (Undergraduate Studies) in a major story on improvements in undergraduate education at public research universities.

The College Park "In the News" column will run periodically in *Outlook* throughout the spring semester.

Astronaut to Speak During Black History Month Celebration



Col. Charles F. Bolden, Jr.

Colonel Charles F. Bolden, Jr., a U.S. Marine Corps officer and NASA astronaut who has been the pilot for two space shuttle missions, will be the guest speaker at the College of Engineering and the College of Computer, Mathematical and Physical Sciences annual Black History Month celebration.

The astronaut will speak Feb. 13 at 2:30 p.m. in the Judith Resnik Lecture Hall (Room 1202) of the Engineering Classroom building.

Bolden holds a B.S. degree in electrical science from the U.S. Naval Academy and an M.S. in systems management from the University of Southern California.

Bolden graduated from the U.S. Naval Test Pilot School at Patuxent River in 1979 and was assigned to the Naval Air Test Center's Systems Engineering and Strike Aircraft Test Directorates. A year later he was selected by NASA and qualified as pilot for assignment as a space shuttle flight crew member.

Bolden piloted the space shuttle *Columbia* and more recently, the

Discovery on its mission to deploy the Hubble Space Telescope. He has logged 267 hours in space and will be the commander aboard *Columbia* for the shuttle's scheduled April 1991 launch.

At NASA, Bolden has served as chief of the safety division at Johnson Space Center and lead astronaut for vehicle test and checkout at the Kennedy Space Center among other technical assignments.

He holds the Defense Superior Service Medal, the USC Outstanding Alumni Award, and the USC Alumni Award of Merit.

OUTLOOK

Outlook is the weekly faculty-staff newspaper serving the College Park campus community.

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Letters to the editor, story suggestions, campus information & calendar items are welcome. Please submit all material at least three weeks before the Monday of publication. Send it to Roz Hiebert, Editor *Outlook*, 2101 Turner Building, through campus mail or to University of Maryland, College Park, MD 20742. Our telephone number is (301) 405-4621. Electronic mail address is outlook@pres.umd.edu. Fax number is (301) 314-9344.

UNIVERSITY OF MARYLAND AT COLLEGE PARK

Management Center Wins USAID Grant

The International Development Management Center (IDMC), an affiliate unit of the Maryland Cooperative Extension Service, has been awarded a subcontract for Implementing Policy Change (IPC), a new, five-year project of the U.S. Agency for International Development.

IPC has \$5.2 million in core funding and projects \$13.9 million in buy-ins from USAID overseas missions.

The objective of IPC is to use, through technical cooperation, strategic management processes and

methods to assist leaders and managers in less developed countries put policies into action.

Derick Brinkerhoff, associate director for research at IDMC, will be the lead technical specialist in charge of the IPC research program, which includes agriculture, development, information management, and irrigation and natural resources.

College Park Alumna is Teacher of the Year

Congratulations to Rosemarie McConnaughey! The Prince George's teacher, who received both her bachelor of science and master's degrees in education from the University of Maryland at College Park, recently received the Teacher of the Year Award for the State of Maryland. McConnaughey teaches fifth grade at Columbia Park Elementary School in Landover. She is the first teacher from Prince George's County public schools to win the distinction.

NEWS

Dorfman Discusses Planning for the University's Future

continued from page 1

amount of funding that is not presently available. Nevertheless, we want to have a better institution.

Q: Will you concentrate specifically on planning for the July 1 fiscal budget?

A: No. We'll look at both the long and short term and work on creating a long-range master strategy. I certainly don't envision this as a one-shot process. It's important to remember that the Strategic Planning Committee will continue, as President Kirwan said, over the next several years. Of course, whatever this group recommends will be presented to the president's cabinet. Ultimately the president has the final decision on any changes.

Q: Is the Enhancement Plan the base document from which you will work?

A: It provides an overall framework and vision. The discourse in the Strategic Planning Committee will further serve to clarify and refine what some of the important priorities and target areas are going to have to be.

Q: How can we keep enhancing the campus when we're having to cut back so significantly?

A: We have to enhance selectively. We can't expect to operate all of our current activities at their current levels. We will have to come up with many more efficiencies. We've got to look at how we run the campus, explore financial arrangements that will produce economies, decide on which activities we might have to delay or eliminate, agree on what some of our most important and creative programs are and see how they can be stimulated to higher degrees of accomplishment, and to move resources from more peripheral activities. We must maintain the quality of those activities that this planning process identifies as being of critical importance to the university.

Q: The president has said that the university will be reallocating up to \$3 million, or 1 percent annually. That sounds like a drop in the bucket of the current \$25 million budget reduction.

A: Yes, but after we've absorbed a \$25 million reduction, it is very difficult to find yet additional funds for reallocation. Nevertheless, it is important that we have the ability to move resources from less critical areas to those areas most essential to the university.

Q: This process surely will create a lot of anxiety. How are you going to make sure many points of view are heard?

A: We have to make sure that the campus community shares our goal of improving the institution. The mission of the Strategic Planning Committee—indeed all of us—must be to nurture programs of quality and centrality to the overall mission of the university. That's a goal that everyone can feel a part of and responsible for. Certainly, some programs are going to benefit and others are going to suffer somewhat. But we always have as a goal the protection of the human aspects of our activities—the fact that this is a community of human beings who are mutually reinforcing.

That doesn't mean that hard decisions don't have to be made. They do. But my hope is that this can be an opportunity for improving the university, that while we may not be able to do the same broad range of enhancements that we had once hoped to do, what we will end up with will be of very high quality, and people will have occasion to feel proud of the institution.

As to listening to many points of view, I know that the committee will want to make themselves as available as possible. I myself have scheduled meetings with faculty groups and department chairs. I intend to make myself as visible as I can so that people have a sense that this process is not being carried out in isolation but is a dynamic and open process in which they have a role to play. And we certainly would not want to move significant resources from any activity without giving the people affected an opportunity to make their case.

Q: You say many areas can stand careful examination and that activities of a similar nature could be put in closer connection with each other. Does that mean merging some programs?

A: That's one possibility. But the committee won't focus only on academic affairs. It will look at efficiencies across the different divisions and will take recommendations from various groups such as APAC and feed them into the strategic planning process.

Q: Will some highly regarded programs that currently are well-funded remain untouched while others of less stature will be targets for cutbacks?

A: We have to enter into this process with the understanding that a university is a community of open-minded people. The idea of putting anything off limits for rational thought and discussion is not one with which I feel very comfortable.

The second point is that we really have to think about how the university is going to enter the 21st century. There is nothing that says

the university in the next century has to look like ours does today. We have to think very creatively about how we are going to enter the future. That means some things are going to be more important than others. Unless our planning process gives us the kind of flexibility we need to face the future, we will not have succeeded.

Q: How will you speed up this process?

A: The campus has been engaged in this process in one guise or another for many years. We also have on campus a number of experts who have written extensively on university planning. I intend to make as much use of our own internal resources as possible.

Q: Can you give some examples of the kinds of programs that might be eliminated?

A: It is too early in the process to cite specific examples. The campus will have to decide whether it wants to slide toward mediocrity by maintaining all its activities, or whether it will make carefully chosen selective cuts in order to maintain and improve the quality of those essential activities that it will continue. The process that has been set up is meant to provide a very broad input in determining these priorities.

Q: Anything you'd like to add?

A: The activities going on now in the colleges and departments and various student activities taking place provide an excellent opportunity for the university to grow, not in economic terms, but in intellectual, scholarly and service terms. As I said earlier, we have to look within ourselves for the energy and courage to make some very difficult choices. It's important to keep in mind the vision enunciated by the president in his inaugural address. We have to remind ourselves that our goal is to become truly excellent in those activities that we define as the ones that are of most central importance to the institution.

One of the hallmarks of a great university, whether it is small or very large, is that all of us have a sense of the mission of the university and the feeling of being part of something greater than ourselves. I think we are developing that kind of spirit and I hope it will continue to grow.



J. Robert Dorfman



Forum on Gulf Crisis
The university's Center for International Security Studies at Maryland (CISSM) in association with the School of Public Affairs and the Department of Government and Politics is sponsoring a campus-wide Forum on the Gulf Crisis on Tuesday, Feb. 12 from 3:30 p.m. to 5:30 p.m. in the auditorium of the Zoology-Psychology Building in Room 1240. For more information, call the CISSM office at 403-8114.

New Faculty Grievance Policy Takes Effect

In the future, when a faculty member has a complaint, grievance, or difference of opinion with the university, he or she will be able to turn to a new faculty grievance policy that has just taken effect.

The new *Faculty Grievance Procedure* replaces the *UMCP Faculty Grievance Procedure*, which had been in place since 1983. The policy supercedes the *System Policy on Faculty Grievance*, approved by the Board of Regents in November, 1989.

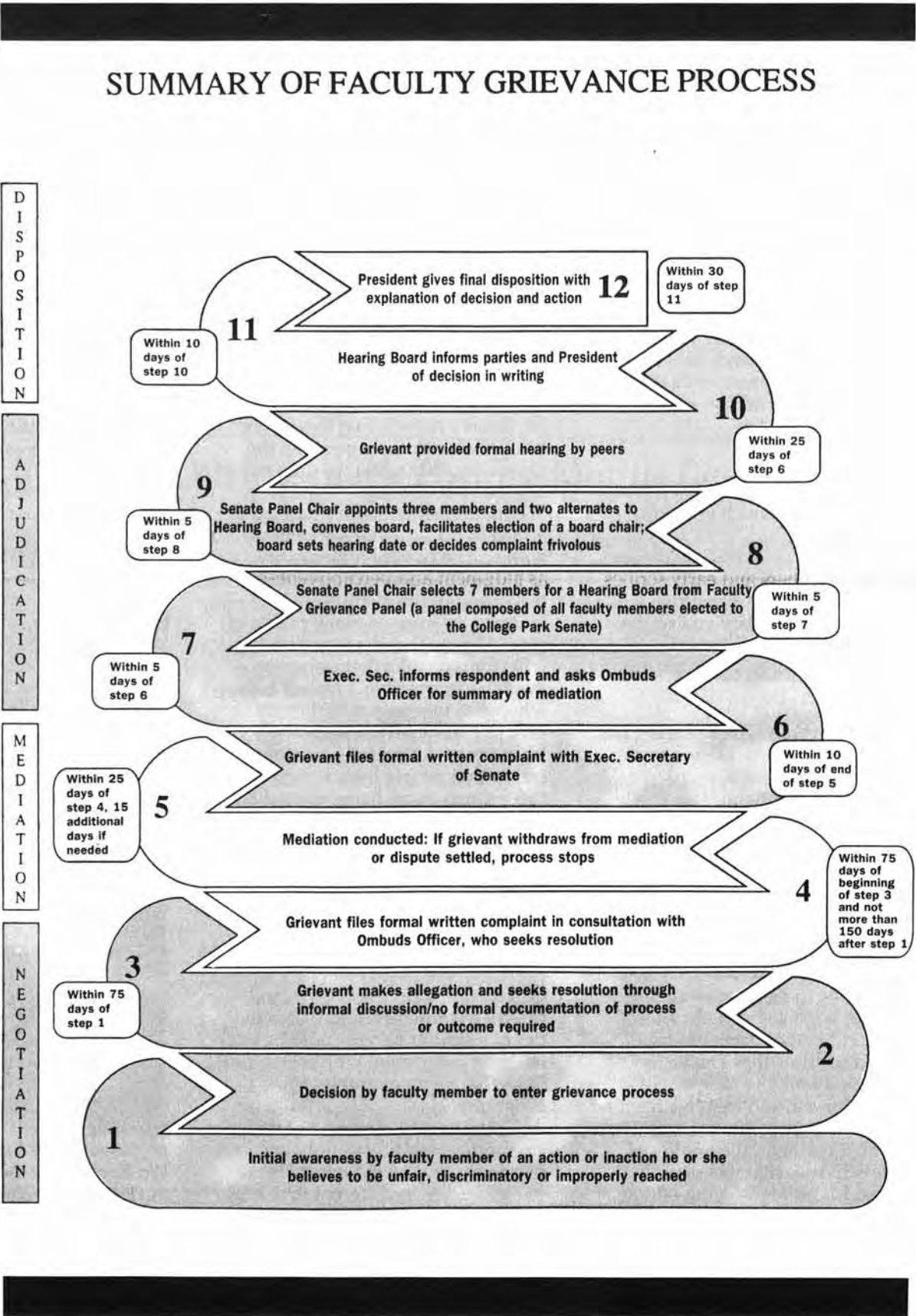
According to Dean John Burt, who chaired the committee that wrote the new policy, all faculty should be aware of the new process because "It represents a whole new way of doing business at the university."

There are three major differences between the 1983 Faculty Grievance Procedure and the new policy, says Burt. One is the fact that the policy creates an Ombuds Officer who will provide neutral and impartial advice to faculty members who feel they have been unfairly treated. The new policy also contains a significantly shortened but well-organized formal hearing process that can be used in the event that informal attempts to resolve the conflict do not succeed. Finally, says Burt, "The new procedure makes the governance process more liberal as to what can be grieved than in the past. One may file for any decision that he/she believes to be unfair, whereas in the past, the process was more restrictive."

The process to develop the new faculty grievance policy has been a lengthy one. It began, four years ago, on October 12, 1987 when the Campus Senate decided to appoint a task force to review the Faculty Affairs Committee Report on the procedure. In February 1988 then-Chancellor John Slaughter appointed a committee, which presented its report to the Campus Senate in April, 1990. After senate approval, the report was sent to the president who suggested some changes that ultimately were accepted. The new Faculty Grievance Process went into effect on December 13, 1990.

The steps in the policy are outlined in the accompanying chart. Copies of the policy will be available in the Campus Senate office.

According to Burt, creating the new process was a long and drawn out procedure with many differing opinions on the part of those involved in developing the document. The only thing that allowed the committee to write a policy upon which they all agreed was the fact that a stumbling block was removed when the committee decided take out a widely disputed part of the procedure and hand it over for consideration as part of the Appointments, Tenure and Appeals policy.



"The time we spent developing the new policy was well-spent," feels Burt. "The policy is important for many reasons, one of which is that the procedure will afford faculty a real opportunity to participate in the governance of the campus. In the past, perhaps only five or ten faculty grievances have been filed, given the restrictiveness of the

procedure," says Burt. "It is imperative that the faculty know they have a 1990, updated grievance policy and be acquainted with it." Besides Burt, committee members included Richard Claude, Richard Jaquith, Jim Grunig, Anne MacLeod, Ellen Scholnick, and George Snow.

Roz Hiebert

Chart provided by
Dean John Burt

A Benjamin Britten 'Entertainment' to be Presented in Tawes Recital Hall

On Saturday evening, Feb. 23 at 8 p.m. in Tawes Recital Hall, music faculty member James McDonald, tenor, will create an "Entertainment" featuring the song cycle, *Who Are These Children?* by Benjamin Britten. Actors Karen Olson and Jeff Kensmoe will read from an imaginary correspondence between Britten and Eric Crozier, Britten's librettist. Ruth Ann McDonald will be the accompanist. Tickets for this Artist Scholarship Benefit Series event are \$10 for general admission and \$7 for students and senior citizens. For further information call 405-5548.

ARTS

Present (Almost) at Creation of Classics Department

If you want to learn about the ancient history of College Park's Department of Classics, contact Rolf O. Hubbe before the end of the semester.

Hubbe, associate professor of classics and the second faculty member to be hired for the department after its creation in 1955, will retire at the end of the semester after a 35-year career at College Park.

In Hubbe's honor, the department will hold a lecture series, "Speakers of Words and Doers of Deeds: Character and Motivation in Homer," during the spring semester. Hubbe will present the first lecture in the series on "Perceiving Achilles" at 4 p.m. Tues., Feb. 5, in Rm. 2309 Art/Sociology Building.

During his career at College Park, Hubbe has specialized in the teaching of ancient Greek. Having taught classes of beginning Greek ranging from 10-15 students during his early years at the university to 20-25 in recent years, Hubbe has introduced hundreds of undergraduates to the language of myth tellers, philosophers and early scribes of the New Testament.

The overwhelming majority of his students, especially in beginning courses, are not classicists, Hubbe says.

"I usually get students who are studying some other subject—art history, theology, history—and

need to learn Greek to help with their other studies," he says.

Over the years, Hubbe has spotted academic fads in other areas of the humanities through the composition of his own classes. For instance, in the early the 1970s during the "Jesus Movement" among students, Hubbe found an upsurge of aspiring New Testament scholars in his classes.

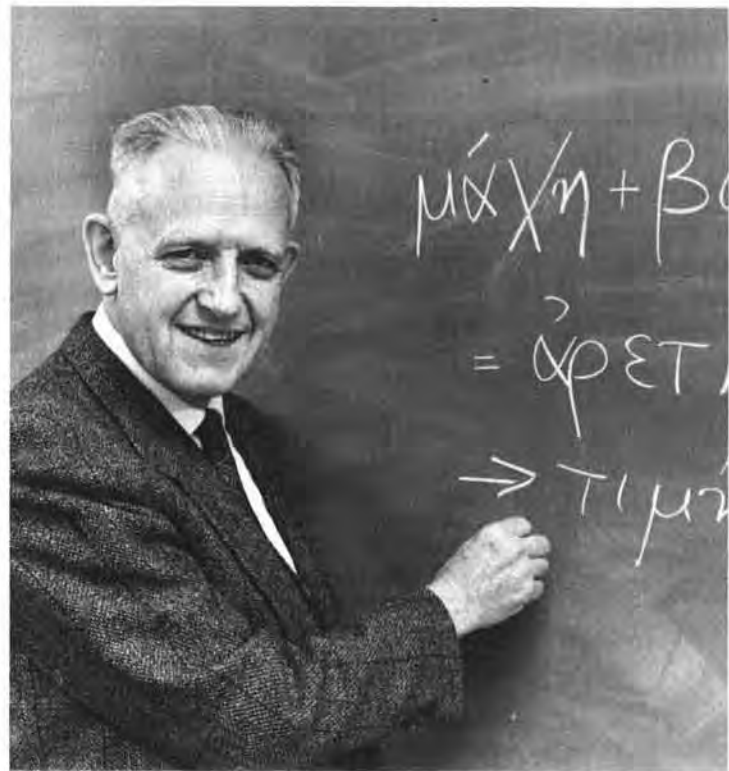
Throughout his career at College Park, the Princeton-trained faculty member has set teaching as his top priority in his academic work. But in retirement, Hubbe plans to concentrate on research interests related to the poems of Homer.

Hubbe is studying Homer's works with an emphasis on the "perception" of the characters. He sees "perception" as a fundamental component of Homer's work, one that has been largely neglected by scholars in his estimation.

In Hubbe's view, Homer's heroes were distinguished by their adeptness at both "battle" and "counsel." The "counsel" side of the ledger includes such characteristics as judgment and perceptiveness.

Hubbe argues that scholars have tended to overemphasize the importance of martial skills in Homer. Actually, Homer places greater value on qualities of "counsel," Hubbe says.

"I realize that I'm taking an extreme position. But this is some-



Rolf O. Hubbe

thing that has been ignored," Hubbe says.

Lectures in the series will continue throughout the spring semester. For more information call 405-2013.

Brian Busek

Our Busy Music Faculty: Survey Uncovers a Multitude of Recordings

Last fall acting music department chair Leon Major asked Rachel Wade, assistant research scholar in the C.P.E. Bach edition project, to gather a list of department-related recordings. He thought it would be interesting to know what faculty recordings were currently available and perhaps display some of them at university concerts.

Major had no idea that the list would end up with more than 140 separate items on it! They range in type from jazz to classical, from massed choral works to gridiron favorites. And new releases are coming out each month.

If you thought about it, you could probably name some of the faculty artists who would be likely to have made a number of recordings: certainly the members of the Guarneri String Quartet would come to mind, as well as perhaps pianist Santiago Rodriguez, and baritone Dominic Cossa. You may not be aware that violinist Jaap Schroder and cellist Kenneth Slowik are now adjunct members of the faculty, and this adds their many recordings for the Smithsonian Collection and elsewhere to the department's ever-growing list.

As a service to our readers, *Outlook* from time to time will publish parts of this list, grouped in sub-categories. We will attempt to be both brief and as complete as we can, so that the campus community will better understand the richness and

diversity of the musical artistry we have among us.

Watch for our first list, recordings of university-related choral music, in an upcoming issue of *Outlook*.

Language House Exhibition Celebrates 700 Years of Switzerland

An exhibition celebrating the 700th anniversary of Switzerland will open Wednesday, Feb. 6, in the Language House.

The exhibition, "Face to Face with Switzerland," consists of panels that feature images and text that will introduce audiences to milestones in Swiss cultural, social and political history since its founding in 1291. A total of 160 copies of the exhibition will circulated throughout the world during 1991. The Language House is the exhibition's first site in the Washington D.C. area.

The exhibition will be on display

mainly in the Language House's multi-purpose room. It is the first major cultural exhibit to be shown in the academically-based residence hall since its opening in fall 1989.

An opening reception featuring remarks by President William E. Kirwan and officials from the Swiss Embassy will begin at 4 p.m. Wednesday, Feb. 6, in the Language House. The exhibit, which is sponsored by the Swiss Embassy, will be on display through March 6.

The exhibit is free and open to the public. For more information call 405-6995.

Publications Award: Last Call for Entries

Feb. 8 is the deadline for entries for the 1991 Publications Award Program. Devised to recognize and encourage excellence in internal and external university communications, the new program will present some 15 awards in nine categories in a ceremony on March 21. The event will coincide with a publications workshop and "Information Express" presented by Creative Services and the university's Publication Council. Call 405-4615 for forms and information.

Aquacultural Products: Will Consumers Bite?

Maryland's aquaculture industry, already producing products worth \$10.6 million annually, has plans to supply consumers with a steady stream of seafood, including hybrid striped bass. But how many consumers will choose to buy these products at perhaps \$8 per pound?

Answers to that question are forthcoming from the work of Ivar Strand, Nancy Bockstael and Douglas Lipton. All are members of the Department of Agricultural and Resource Economics, and their research project is supported by a Maryland Agriculture Experiment Station Grant.

Aquaculture products account for an increasing proportion of the world's seafood supply, says Strand. And the decline of wild stocks of oysters and other species opens the market for aquaculturally raised products. Meanwhile, the first sanctioned sales of farm-raised hybrid striped bass in Maryland occurred just last year.

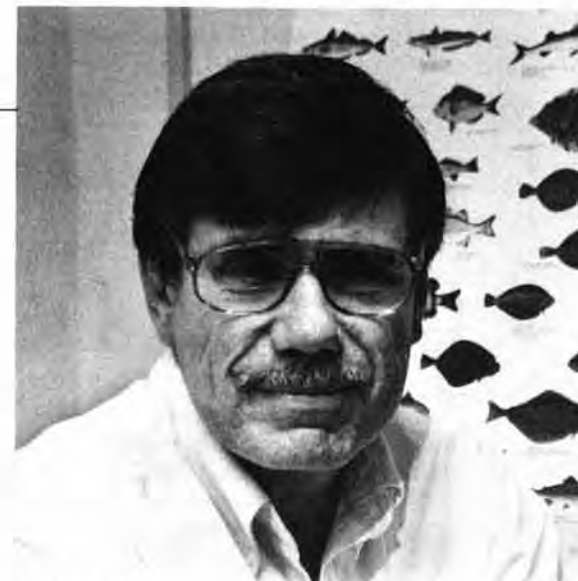
Maryland's proximity to the

Boston-Washington corridor offers a competitive advantage—producers can supply a fresh, high-value product to high-income population centers, Strand says. But the success of aquacultural production depends upon producers finding markets in which their relatively high-cost product can compete.

The restaurant trade, for example, is a market that values the reliable, steady supply of a product.

"But we don't have data on restaurant consumption patterns and how consumer preferences change in different seasons," Strand says. "We have limited information on striped bass wholesale markets but there has been little research on actual purchases by seafood consumers, by location of consumption, such as at home, or restaurants, or by species and product type."

The researchers plan to characterize the demand for aquacultural products by analyzing away-from-home consumer expenditures on seafood products. Since there is as



Ivar Strand

yet relatively little consumption of Maryland aquacultural products, Strand, Bockstael and Lipton will characterize demand based on consumer behavior toward similar products.

The research team aims to:

- Identify and evaluate the demand for different forms (fresh, frozen, breaded, etc.) of seafood.
- Determine the effects of socio-demographic characteristics (age, income level, etc.) on seafood consumption.
- Determine seasonal changes in preferences toward away-from-home seafood consumption.

Kevin Miller

MAES Science Editor

Super Rubber

continued from page 1

But the new compound could reduce that cost substantially. During recent army tests, Silverman's new material won high marks, proving dramatically more durable after more than 2,000 miles of testing at a military proving ground in Arizona. "Our rubber is a major improvement," Silverman notes. "The Army's Tank and Automotive Command saw increases in the resistance to abrasion (physical wear and tear on rubber) ranging from 60 to 280 percent."

Abrasion is one major enemy of rubber—the other is the environment. Rubber is damaged by oxidation, which is caused by exposure to ozone, air and sunlight. This leads to the drying and cracking seen in hoses, tires and other rubber products that have been exposed to ozone for long periods of time.

Although Silverman suspected his new rubber might be more resistant to the damaging effects of ozone than normal rubber, he is astounded by just how tough his compound turned out to be.

In tests conducted in ozone chambers at Fort Belvoir, Virginia, the new material proved so impervious to ozone that Army testers thought their equipment was malfunctioning. "They thought their chamber must be broken because the material showed so little change while the original material had disintegrated," Silverman says. "The new material showed no change for 35 days under test conditions where the original failed in less than a week."

Resistance to ozone is a desirable

characteristic for tank pads as well as other rubber goods that must be stockpiled for long periods of time. Silverman's discovery could make it possible to store such materials for long amounts of time without compromising their reliability.

The advantages of the new rubber and its commercial possibilities have caught the attention of a leading U.S. corporation, General Dynamics. General Dynamics makes the army's newest tank, the M1.

The St. Louis, Missouri-based company recently signed a six-month option with the University of Maryland at College Park to evaluate the technology. At the end of that period, General Dynamics has the option of signing a license agreement which would give the company the right to use the rubber technology although the university would still own the patent.

Other divisions within General Dynamics are exploring the possibility of using the new rubber and other products of electron beam curing on other military hardware, such as submarines, airplanes and missiles.

While initial use of Silverman's compound appears focused on military applications, the new rubber also may prove ideal for use in a wide range of civilian products. These include such diverse products as conveyor and other types of belts, shock mounts, seals, non-pneumatic tires, pool liners, various rubber coatings, windshield wiper blades—even suits designed to protect against harmful chemical or biological agents.

"We think this technique is the basis for a new rubber technology," Silverman points out.

He cautions, however, that much research remains to be done before commercial uses for the new compound become a reality. "We have developed a new material, but there is a great difference between a material and a product."

Research also remains to be done to better understand why the rubber assumes its special characteristics after Silverman's processing. Intriguingly, although the new rubber is distinguished by its special toughness and durability, the College Park researchers are not exactly sure what makes the rubber so rugged. While some of its extra strength appears to result from the special ingredients added during the heat and pressure curing process, it is the electron radiation treatment that seems to be the key to giving the rubber its special properties.

Exactly why this happens is not clearly known, but the radiation appears to cause the rubber molecules to bind or link together in such a way as to greatly increase the toughness of the final product. "At the molecular level, rubber is tied together by structures that resemble strings of pearls," Silverman explains. "Irradiation with electrons cross-links those strands in a manner, apparently making the rubber tougher and more wear-resistant."

Even though Silverman is extremely pleased with the initial test results of his new rubber compound, he is equally excited about its future prospects. "Already, the rubber compound has exceeded our expectations," he says, "and that was only our first try. We hope to unlock its full potential in the months ahead."

Gary Stephenson



These two tank pads show the improved strength of Silverman's material. One is new, the other pad has been tested for 2,000 miles and could go further. A pad of conventional material cannot last half as long and pulverizes.

Forty-Hour Work Week on Campus Senate Agenda

To be discussed by the Campus Senate at its regular meeting on Feb. 7 is a "Priorities for People Resolution" concerning the uncompensated conversion to the 40-hour week of certain university employees. Also on the agenda is an address by Kathryn Mohrman about progress in undergraduate education at College Park. The meeting from 3:30 to 6:30 p.m. in Room 0126 Reckord is open to the campus community, and interested people are urged to attend. Call 405-5805 for information.

F.Y.I.

40-Hour Work Week Goes Into Effect

On January 8, 1991 Governor William Donald Schaefer issued an Executive Order mandating a 40-hour work week for all state employees. Until now, only about one-third of the state workforce has worked a 40-hour week, with two-thirds, including most University of Maryland employees, working a normal 35.5-hour week.

In his order, Schaefer stated that expanded hours will increase workforce productivity, reduce overtime costs to the state, and be an alternative to terminating positions during this time of fiscal shortfalls.

On January 24th, the Board of Regents established the 40-hour work week as the normal work week for the University of Maryland System. The order will become effective February 10, when new hours for the business day will

become effective.

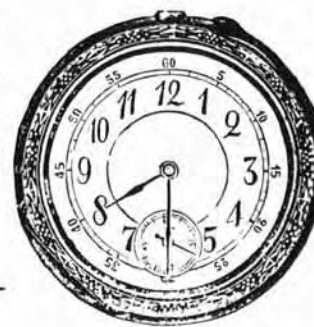
On Monday, January 28, President William E. Kirwan sent a letter to university employees discussing various aspects of the new rule. He said that the university is considering several options regarding official working hours, with varying amounts of time for lunch, depending on the daily hour scheme chosen. He also announced that a working group chaired by Vice President Sturtz would hold an open forum within a few days, and he invited broad campus participation in the open session.

"Over the past several years, the College Park campus has endeavored to create a campus climate where the contributions of all of its members are valued. I greatly appreciate the hard work, loyalty and dedication to the University that our classified employees and associate

staff have demonstrated. The Vice Presidents and I will make every effort to find ways to minimize the impact of this change in the work week on all of those affected," the president's letter said.

In another response to the Governor's Executive Order, a group of state legislators have stated that if a 40-hour work week is implemented, the financial sacrifice should be shared by all state employees. Several delegates from Prince George's and Montgomery counties have indicated that they will draft legislation to stop the new plan until its costs and benefits are thoroughly reviewed. They say that their bill will attempt to block implementation until July 1, 1992.

Roz Hiebert



Business Hours?

Open Letter to the Campus About the 40-Hour Work Week

Dear Colleagues:

Governor William Donald Schaefer, by Executive Order 01.01.1991, intends to reduce my hourly wages by 11.2 percent. This order mandates that the normal work week for state employees will be 40 hours. Those of us who currently work a 35.5 hour week agreed to do so at a specific hourly rate. As an Office Secretary III, my hourly wage will be effectively reduced from \$10.25 to \$9.10, less than when I began working here at College Park 15 months ago.

Grade 9 employees make up the largest number of affected staff. At base pay level, grade 9 staff will find their hourly wage to be within one cent of what it was in July 1987! We have been ordered to work an additional 234 hours per year (nearly 6 weeks!) for free. Those employees with young children will also have the increased burden of child care costs for these additional hours.

The impact of this mandate un-

fairly burdens a group of employees that historically receive the lowest compensation, the majority of whom are women and minorities. To target only 35.5 hour per week employees is discriminatory. There will be no impact on 40 hour per week employees.

Equity is the primary issue. If belt-tightening measures are called for, and I do not doubt that they are, then I implore Governor Schaefer to tighten with equal pressure across the board. If equity means that all state employees bear the economic burden by working a 40 hour week, then equity must also mean that everyone shall be fairly compensated for each hour. If increased productivity and decreased overtime costs are the goals, decreased wages are not the means.

Levels of productivity directly correlate to morale. In conversations, both formal and informal, I hear dismay, frustration and anger. I share these sentiments. Discussions center around a strong

willingness to "do our part" but with an equally strong sense that the burden must be equal among all state employees.

This mandate will take effect in a matter of days. University officials have had precious little time to react. Increased demands on fewer employees caused by hiring freezes and slashed budgets have already taxed the creativity and efforts of employees at all levels. I ask, please, that university administrators, in their herculean efforts to redistribute the shrinking budget, reallocate the monies necessary to compensate fairly those employees being asked to work increased hours.

We are part of the team. Being properly compensated affirms our value; increased commitment and productivity will follow.

Kathleen Maroney
Office Secretary III

Office of the Director of Libraries,
McKeldin Library

International Exchange Agreements Committee Requests Proposals

The International Exchange Agreements Committee has been charged by the provost to allocate \$15,000 to faculty and staff who are furthering the university's educational and scholarly collaborations across international boundaries.

Interested faculty are invited to submit proposals that build on and intensify existing international collaborations and specify plans to sustain a long-term relationship with the international university partner, according to Judy Olian, chair of the International Exchange Activities Committee.

Criteria for the proposal review include reasonably mutual goals between the university and the overseas institution; breadth of impact of program on multiple departments within the university; knowledge that there is a specific person responsible for administering the program here and at the

overseas institution; specificity of program planning; indication of interest from the overseas exchange institution; the availability of matching funds from the home university, overseas university or other sources; and plans for seeking alternative long-term funding.

Proposals should also include an academic rationale for the exchange, a budget for the activity, budgetary commitments from the relevant departments and/or colleges, (and if appropriate) letters from relevant department chairs or deans, and an expression of interest from the overseas institution.

According to Olian, the International Exchange Agreements Committee will not provide funds to cover faculty salaries or travel that otherwise qualify under another university funding program.

Moreover, the program is not designed to support faculty devel-

opment of study abroad programs, although a study abroad program may be a logical next step in the exchange program. The university has a small Study Abroad Development Fund administered by the Office of International Education Services.

Proposals should be no longer than four pages, and the submission deadline is Feb. 15. Proposals, which should refer to the 1990/91 academic year through the summer of 1991, should be submitted to Judy Olian, chair, Office of the President, Main Administration Building.

For more information concerning the International Exchange Agreement program, please call Olian at 405-7225 or Marcus Franda, director of International Affairs, at 405-4772.



Judy Olian

CALENDAR

Taverner Consort Recreates Monteverdi's 1640 Vespers at Washington National Cathedral

On Feb. 8 at 8 p.m., University Community Concerts will present the Taverner Consort, Choir and Players, performing Monteverdi's Venetian Vesper Music of 1640 at the Washington National Cathedral. Taverner director, Andrew Parrott, has recreated a complete seventeenth-century Vespers service from the Cathedral of St. Mark's in Venice. Ticket prices are \$17.50 standard admission and \$15 students and seniors. A special price of \$5 for full-time students is available at the door. For more information, call University Community Concerts at 403-4240.

FEBRUARY 4-13

4 MONDAY

Art Exhibition, three concurrent exhibitions featuring *New Deal Images*, *Contemporary Prints from the Private Collection*, and *The Andy Warhol Athlete Series*, today-March 15, The Art Gallery. Call 5-2763 for info.

♦ **Women's Studies Lecture**: "We Were There: African American Women and the Civil Rights Movement," Gladys Marie Frye, Maieka Hansard, Mary Cothran, Rhonda Williams, Sharon Harley, noon-1:30 p.m. (bring lunch), 0109 Hornbake Library. Call 5-6877 for info.

Horticulture Seminar: "Constraints on Using Composed Sewage Sludge and Municipal Refuse in Horticulture and Agriculture," Rufus Chaney, USDA, ARS, Beltsville, 4 p.m., 0128 Holzapel. Call 5-4336 for info.

Computer Science Colloquium: "Ten Minute Madness II," Comp. Sci. faculty, 4 p.m., 0111 Classroom Building. Call 5-2661 for info.

Entomology Colloquium: "Larval Defense in Tortoise Beetles: Costs, Effectiveness, and Interspecific Variation," Karen Olmstead, Entomology, 4 p.m., 0200 Symons. Call 5-3912 for info.

Space Science Seminar: "Particle Acceleration at Shocks: A Review from the Computer Simulation Perspective," Don Ellison, North Carolina State U., 4:30 p.m., 1113 Computer and Space Sciences. Call 5-4829 for info.

♦ **Student Black Women's Council Lecture**: "Which Came First: Racism or Slavery?," Rhonda Williams, 6:30 p.m., Nyumburu Cultural Center. Call 4-7174 for info.

♦ **African Storytelling**: "Umoja Sassa," 7 p.m., Grand Ballroom, Stamp Student Union. Call 4-7174 for info.

Women's Basketball vs. Georgia Tech, 7:30 p.m., Cole Field House. Call 4-7064 for info.

5 TUESDAY

Seminar in Ecology, Evolution, and Behavior: "Molecular Phylogeny of Plethodontine Salamanders and Hylid Frogs," Richard Highton, Zoology, noon, 1208 Zoo/ Psych. Call 5-6884 for info.

Physics Colloquium: "BCS Mechanism at Work in Various Fields of Physics," Yoichiro Nambu, Enrico Fermi Institute, U. of Chicago, 4 p.m., 1410 Physics, tea reception, 3:30 p.m. Call 5-5953 for info.

Classics Department Lecture: "Perceiving Achilles," Rolf O. Hubbe, response, Lillian Doherty, 4 p.m., 2309 Art/Soc, reception following. Call 5-2013 for info.

♦ **Workshop**: "How to Handle Racism," Michael Powell, Human Relations, 6:45 p.m., location TBA. Call 4-7174 for info.

Movie: *To Sleep with Anger*, 7:15 & 9:45 p.m., Hoff Theatre. Call 4-HOFF for info.

Writers Here and Now Reading, Alan Cheuse, novelist, 8 p.m., 3101 McKeldin Library (Katherine Anne Porter Room). Call 5-3809 for info.



Andrew Parrott, director of the Taverner Consort.

6 WEDNESDAY

Counseling Center Research and Development Meeting: "The Role of Academic Achievement Program in the Changing Educational Environment," Jerry Lewis, Education Development, noon-1 p.m., 0114 Shoemaker. Call 4-7677 for info.

Molecular and Cell Biology Seminar: "Molecular Responses to Environmental Stress in *Bacillus Subtilis*," Ron Yasbin, UMBC, 12:05 p.m., 1208 Zoo/ Psych. Call 5-6991 for info.

Anthropology Seminar: "Planning and Evaluation: Applying the Anthropologist's Tool Kit," Robert Werge, U.S. Dept. of Agriculture, 3:30-5 p.m., 1114 Woods. Call 5-1423 for info.

♦ **Dramatic Performance**: "A Tribute to Pearl Bailey, Sara Vaughn and Sammy Davis, Jr.," by *Shades of Harlem*, 6-8 p.m., Colony Ballroom, STAMP Student Union. Call 4-7174 for info.

Movie: *To Sleep with Anger*, 5, 7:15 & 9:45 p.m., Hoff Theatre. Call 4-HOFF for info.

♦ **Lecture**: "African World History," James Brunson and Runoko Rashid, 7-9 p.m., Cambridge Dining Hall. Call 4-7174 for info.

7 THURSDAY

♦ **Agriculture and Life Sciences Lecture**: "Participation of African Americans in the Natural Sciences in the 1990s and Beyond," Amel Anderson, Agriculture and Life Sciences, noon, Prince Georges Room, Stamp Student Union. Call 4-7174 for info.

Danish Lecture: "Reporting American News Events in Denmark," Jorgen Poulsen, Danish Broadcasting Corp., 12:30-1:45 p.m., 2122 Jimenez. Call 5-4097 for info.

♦ **Art Lecture/Presentation**: "A Journey into Art," featuring current research on African American art, David Driskell, 12:30 p.m., 1309 Art/Soc. Call 5-1445 for info.

Meteorology Seminar: "Orographic Gravity-Wave Drag Effects on Extended-Range Forecasts," Anandu Vernekar, Meteorology, 3:30 p.m., 2114 Computer and Space Sciences, reception at 3 p.m. Call 5-5392 for info.

Campus Senate Meeting, 3:30-6:30 p.m., 1026 Reckord Armory. Call 5-5805 for info.

History and Philosophy of Science Colloquium: "The Strange History of Hypersonic Flight," Richard Hallion, National Air and Space Museum, 4 p.m., 1202 Engineering Classroom Bldg. Call 5-5691 for info.

Reliability Engineering Seminar: "On Estimating Software Reliability Using Data from Design and Test," John Gaffney, Software Production Consortium, 5:15-6:15 p.m., 2115 Chemical and Nuclear Engineering Bldg. Call 5-3887 or 5-3883 for info.

Movie: *Presumed Innocent*, 7:15 and 9:45 p.m., Hoff Theatre. Call 4-HOFF for info.

♦ **College of Arts and Humanities and Academic Affairs Guest Speaker**, "Who Freed the Slaves?," Barbara Fields, History, Columbia U., featured in PBS series *The Civil War*, 7:30 p.m., 2203 Art/Soc. Call

Greater Washington Solid State Physics Colloquium: "The Electronic Structure of La_2CuO_4 : Renormalization from Density Functional Theory to Strong Coupling Models," M. Shluter, AT&T Bell Labs, 8 p.m., 1410 Physics. Call 5-6142 for info.

8 FRIDAY

Published Women Luncheon, Gladys Marie Fry, English, noon-1 p.m., Carriage House, Rossborough Inn. Call 504-8013 for info and reservations.

"Lunch n' Learn" **Mental Health Lecture**: "How We See Ourselves: Acquaintance Rape Issues on Campus," Ann Collins, 1-2 p.m., 3100E Student Health Center. Call 4-8106 for info.

Movies: *Presumed Innocent*, 7:15 and 9:45 p.m., *The Harder They Come*, 12:15 a.m., Hoff Theatre. Call 4-HOFF for info.

♦ **Concert**: "Songs of Color," 8 p.m., Tawes Recital Hall. Call 5-5548 for info.

University Community Concerts, the Taverner Choir and Consort, Andrew Parrott, director, program TBA, 8 p.m., pre-concert seminar, 6 p.m., Washington National Cathedral, \$17.50 standard admission, \$14.50 students and seniors. Call 80-4239 for info.

9 SATURDAY

Rossborough Inn Pasta Party and Dance, cash bar, 6:30 p.m., dinner, 7 p.m., Rossborough Inn. Call 4-8012 for info.

Artist Scholarship Benefit Concert: "Happy Birthday Mozart," University of Maryland faculty performing works by Mozart and his contemporaries, 8 p.m., Tawes Recital Hall, \$10 standard admission, \$5 students and seniors. Call 5-5548 for info.

Movies: *Presumed Innocent*, 7:15 and 9:45 p.m., *The Harder They Come*, 12:15 a.m., Hoff Theatre. Call 4-HOFF for info.

10 SUNDAY

Wanderlust: "Australia, Land of High Contrast," Ken Laurence, 3 p.m., Hoff Theatre. Call 4-HOFF for info.

Movie: *Presumed Innocent*, 4:45, 7:15 and 9:45 p.m., Hoff Theatre. Call 4-HOFF for info.

11 MONDAY

Horticulture Seminar: "The Use of Genetic Mutants in the Study of Photomorphogenesis in Higher Plants," Paulien Adamse, USDA, ARS, Beltsville, MD, 4 p.m., 0128 Holzapel. Call 5-4336 for info.

Space Science Seminar: "Measurement of Cosmic Ray Proton and Helium Spectra during the 1987 Solar Minimum," Eun-Suk Seo, Louisiana State U., 4:30 p.m., 1113 Computer and Space Sciences. Call 5-4829 for info.

University Community Concerts, Emanuel Ax, piano, program TBA, 8 p.m., Center of Adult Education, \$20 standard admission, \$17.00 students and seniors. Call 80-4239 for info.

Wanderlust: "Australia, Land of High Contrast," Ken Laurence, 8 p.m., Hoff Theatre. Call 4-HOFF for info.

12 TUESDAY

Seminar in Ecology, Evolution, and Behavior: "Demographic Consequences of a Plant-Animal Interaction for a Neotropical Herb," Douglas Schemske, U. of Washington, noon, 1208 Zoo/ Psych. Call 5-6884 for info.

Physics Colloquium: "A Theoretical and Chemical View of Surface Science," Roald Hoffman, Nobel Laureate, Cornell U., 4 p.m., 1410 Physics, tea reception, 3:30 p.m. Call 5-5953 for info.

Michael Dingman Center for Entrepreneurship Seminar: "Financing Opportunities for Entrepreneurship in 1991," registration, 6:30 p.m., program, 7-9:30 p.m., Stouffer Harborplace Hotel, Baltimore. Call 5-2144 for info.

Movie: *Miller's Crossing*, 7:15 and 9:45 p.m., Hoff Theatre. Call 4-HOFF for info.

13 WEDNESDAY

Seminar in Ecology, Evolution, and Behavior: "Cost of Defense in Brassicae," Doug Schemske, U. of Washington, noon, 1230 Zoo/ Psych. Call 5-6884 for info.

♦ **Counseling Center Research and Development Meeting**: "Current Issues Confronting Black Faculty and Staff," Roberta H. Coates, President, Black Faculty and Staff Association, noon-1 p.m., 0114 Shoemaker. Call 4-7677 for info.

Molecular and Cell Biology Seminar: "Ca²⁺ Mediated Permeability Control," Sidney Pierce, Zoology, 12:05 p.m., 1208 Zoo/ Psych. Call 5-6991 for info.

♦ **Colleges of Engineering and Computer, Math, and Physical Sciences Guest Speaker**: Colonel Charles Bolden, Jr., astronaut, 2:30 p.m., 1202 Engineering Classroom Bldg. Call 5-3878 for info.

♦ **Education Lecture**: "African Americans and the Mass Media," 5 p.m., 3237 Benjamin. Call 4-7174 for info.

♦ **"Proud to Be Black Night,"** celebration of African heritage, 7 p.m., Colony Ballroom, Stamp Student Union. Call 4-7174 for info.

Movie: *Miller's Crossing*, 5, 7:15 and 9:45 p.m., Hoff Theatre. Call 4-HOFF for info.

Men's Basketball vs. Georgia Tech, 7:30 p.m., Cole Field House. Call 4-7064 for info.

* Admission charge for this event. All others are free.

♦ **Black History Month event.**